We claim:

1. A method of measuring a wall thickness of a pipe in a pipe rolling line, comprising the steps of:

(a) launching an ultrasonic pulse into a wall of a pipe whereby an ultrasonic wave is transmitted across a thickness of said wall and an ultrasonic echo is returned to a surface of the pipe;

(b) training a laser beam from an illuminating laser onto said surface whereby a laser-light reflection from said surface is modulated by said echo;

(c) collecting laser light reflected from said surface and modulated by said echo as an input optical signal and feeding said input optical signal to a Fabry-Pérot interferometer having two mirrors spaced apart by a predeterminable distance (a), said Fabry-Pérot interferometer having an output optical signal;

(d) passing said output optical signal to a photodiode and converting said output optical signal into an electrical signal and evaluating said electrical signal to determine transit time for echoes spanning the thickness of said pipe and, from said transit time and a speed of sound in material of the pipe, said wall thickness;

(e) at least one of the steps of:

(e_1) deriving a photodiode-measurement control signal from said electrical signal,

(e_2) deriving a input-measurement control signal from said input optical signal, and

(e_3) deriving a rolling-line control signal representing a fabrication process variable;

(f) controlling a linear actuator determining a position of at least one of said mirrors directly or indirectly through a controller for said linear actuator with at least one of said control signals; and

(g) regulating said photodiode with the output from a variable amplification amplifier.

2. The method defined in claim 1 wherein, in steps (e), (f) and (g), a signal measured by said photodiode, as a first photodiode, is varied as a function of the input optical signal as measured by a second photodiode and fed to said controller, each of said first and second photodiodes having respective amplifiers for amplifying the signals measured thereby, the amplifiers being further controlled in a respective control circuit based upon at least one predeterminable command variable (F_T, F_R).

3. The method defined in claim 2 wherein the amplification of said amplifiers is controlled in dependence upon a signal from said second photodiode in said respective control circuit in response to one of said command variables (F_R).

4. The method defined in claim 2 wherein a signal from said first photodiode is varied in dependence upon a measured temperature of said pipe before it is fed to said controller.

5. The method defined in claim 2 wherein the amplification of at least one of said amplifiers is controlled in dependence upon a disturbance variable (z) applied to at least one of said amplifiers through at least one adder.

6. The method defined in claim 5 wherein said disturbance variable (z) is a measured temperature (T) of said pipe.

7. The method defined in claim 4 wherein pipe temperature is measured with a pyrometer.

8. The method defined in claim 2 wherein said controller is a high-dynamic regulator acting upon said linear actuator.

9. The method defined in claim 2 wherein said controller is a regulator applying PID control to said linear actuator.

10. The method defined in claim 2 wherein the control circuits for said amplifiers are operated with high dynamic controllers.

11. The method defined in claim 2, further comprising applying PID control to at least one of said amplifiers.

12. The method defined in claim 2, further comprising applying PI control to at least one of said amplifiers.

13. The method defined in claim 2, further comprising the step of defining at least one of said command variables by stepwise scanning of a course of functional response of the respective control circuit prior to use thereof in a wall thickness determination of a rolled pipe.

14. A device for measuring a wall thickness of a pipe in a pipe rolling line, comprising:

a laser ultrasonic measuring unit having an excitation laser trained on a surface of a pipe for launching an ultrasonic pulse into a wall of the pipe whereby an ultrasonic wave is transmitted across a thickness of said wall and an ultrasonic echo is returned to the surface of the pipe, an illuminating laser directing a laser beam onto said surface whereby a laser-light reflection from said surface is modulated by said echo, and

an interferometer receiving laser light reflected from said surface and modulated by said echo as an input optical signal and having two mirrors spaced apart by a predeterminable distance (a), said interferometer having an output optical signal evaluatable to determine transit time for echoes spanning the thickness of said pipe and, from said transit time and a speed of sound in material of the pipe, said wall thickness, said interferometer having a linear actuator for relatively displacing said mirrors to adjust said distance; and

a control system acting upon said linear actuator and including:

a photodiode receiving said output optical signal,

a controller responsive to a signal obtained from said photodiode and controlling said linear actuator, and

a pyrometer for measuring a temperature of the pipe resulting from the processing of the pipe in said pipe rolling line and providing an input to said controller.

15. A device for measuring a wall thickness of a pipe in a pipe rolling line, comprising:

a laser ultrasonic measuring unit having an excitation laser trained on a surface of a pipe for launching an ultrasonic pulse into a wall of the pipe whereby an ultrasonic wave is transmitted across a thickness of said wall and an ultrasonic echo is returned to the surface of the pipe, an illuminating

laser directing a laser beam onto said surface whereby a laser-light reflection from said surface is modulated by said echo, and an interferometer receiving laser light reflected from said surface and modulated by said echo as an input optical signal and having two mirrors spaced apart by a predeterminable distance (a), said interferometer having an output optical signal evaluatable to determine transit time for echoes spanning the thickness of said pipe and, from said transit time and a speed of sound in material of the pipe, said wall thickness, said interferometer having a linear actuator for relatively displacing said mirrors to adjust said distance; and

a control system acting upon said linear actuator and including:

a first photodiode receiving said output optical signal,

a controller responsive to a signal obtained from said first photodiode and controlling said linear actuator, and

a second photodiode receiving said input optical signal,

respective amplifiers connected to said photodiodes for amplifying respective signals measured thereby, and

a control circuit including a further controller for regulating amplifications of said amplifiers to predetermined values.

16. The device defined in claim 15 wherein at least one of said amplifiers is connected to an adder for introducing a disturbance parameter as a control factor for the respective amplifier.

17. The device defined in claim 15, further comprising a pyrometer for measuring the temperature of said pipe and providing an input to at least one of said controllers.

18. The device defined in claim 15 wherein at least one of said amplifiers has a logarithmic characteristic.

19. The device defined in claim 15 wherein said circuit includes a tolerance former for determining a difference between the measured signal of said photodiodes and feeding a difference signal to the controller responsive to the signal obtained from said first photodiode.

20. The device defined in claim 15, further comprising a vibration-damped support for said interferometer.

21. The device defined in claim 20 wherein said support has vibration-absorbing feet on a bottom side thereof.

22. The device defined in claim 21 wherein said support has an enclosure for said interferometer enclosing said interferometer from all sides.

23. The device defined in claim 22 wherein said enclosure is composed of wood.

24. The device defined in claim 22 wherein said support is provided on inner sides with plate-shaped damping elements.

25. The device defined in claim 24 wherein said damping elements are fibers of medium density.

26. The device defined in claim 24, further comprising a foam between said plate-shaped damping elements and inner sides of said support.